

IN THE CLAIMS**CLAIMS**

1. (currently amended): A personal cooling and heating system comprised of:

a vest;

at least one temperature sensor;

a temperature transfer medium contained by the vest;

a cooling unit;

a heating unit;

a temperature transfer medium transport means;

the temperature transfer medium transport means being capable of transporting the temperature transfer medium from the vest into the cooling unit where the temperature transfer medium may be cooled by one or more cooling means and then once cooled the temperature transfer medium is transported back to the vest by the temperature transfer medium transport means;

the temperature transfer medium transport means being capable of transporting the temperature transfer medium from the vest into the heating unit where the temperature transfer medium may be heated by one or more heating means and then once heated the temperature transfer medium is transported back to the vest by the temperature transfer medium transport means;

a user adjustable electronic controller electrically attached to the temperature transfer medium transport means, the cooling means and the heating means;

the user adjustable electronic controller is electronically connected to the temperature sensor wherein the user adjustable electronic controller automatically and electrically activates the temperature transfer medium transport means when the temperature sensor electronically communicates to the user adjustable electronic controller that the vest is a temperature that is different than that of a user selected temperature setting on the user adjustable electronic controller thus causing the temperature transfer medium to be transported from the vest;

the user adjustable electronic controller automatically and electrically activates only the cooling means when the temperature sensor communicates to the user adjustable electronic controller that the temperature of the vest is higher than the user selected temperature thus causing the temperature transfer medium that has been transported from the vest to be cooled by the cooling means before being transported back to the vest by the temperature transfer medium transport means;

the user adjustable electronic controller automatically and electrically activates only the heating means when the temperature sensor communicates to the user adjustable electronic controller that the temperature of the vest is lower than the user selected temperature thus causing the temperature transfer medium that has been transported from the vest to be heated by the heating means before being transported back to the vest by the temperature transfer medium transport means; and

a power supply means electrically attached to the adjustable electronic controller to provide the electrical power necessary for the adjustable electronic controller in communication with the temperature sensor to activate the temperature transfer medium transport means, and either the cooling means or the heating means;

at least one reversible thermoelectric cooler module electrically attached to and activated by a reversible direct current of electricity that is pulsed from the user adjustable electronic controller in one direction when the temperature sensor communicates to the user adjustable electronic controller that the temperature of the vest is higher than the user selected temperature and in the event that the temperature sensor communicates to the user adjustable electronic controller that the temperature of the vest is lower than the user selected temperature the user adjustable electronic controller automatically reverses the direction of the reversible direct current of electricity that is pulsed from the user adjustable electronic controller.

the reversible thermoelectric cooler module having an electrically reversible hot side and an electrically reversible cold side which is reversed by the user adjustable electronic controller reversing the direction of the pulsed reversible direct current such that the electrically reversible hot side becomes the electrically reversible cold side and the electrically reversible cold side becomes the electrically reversible hot side;

at least one vest loop liquid heat exchanger attached to the temperature transfer medium transport means wherein when the temperature transfer medium transport means is activated the temperature transfer medium is pumped from the vest through the vest loop liquid heat exchanger and back to the vest;

the vest loop liquid heat exchanger having a front side and a back side either or both of which is formed by the electrically reversible cold side of the reversible thermoelectric cooler module such that the temperature transfer medium makes direct contact with the electrically

reversible cold side of the reversible thermoelectric cooler module when pumped through the vest loop liquid heat exchanger when the temperature sensor communicates to the user adjustable electronic controller that the temperature of the vest is higher than the user selected temperature and in the event that the temperature sensor communicates to the user adjustable electronic controller that the temperature of the vest is lower than the user selected temperature the user adjustable electronic controller automatically reverses the direction of the reversible direct current of electricity that is pulsed from the user adjustable electronic controller such that the electrically reversible cold side of the reversible thermoelectric cooler module becomes the electrically reversible hot side of the reversible thermoelectric cooler module which remains in direct contact with the temperature transfer medium;

at least one air heat exchanger;

the air heat exchanger having at least one cooling liquid channel therein;

a cooling liquid contained in the air heat exchanger cooling liquid channel;

the air heat exchanger having at least one air channel there through;

at least one air heat exchanger fan attached to the air heat exchanger;

at least one cooling loop liquid heat exchanger;

at least one cooling loop pump means capable of pumping the cooling liquid from the cooling loop liquid heat exchanger to and through the air heat exchanger cooling liquid channel and then back to the cooling loop liquid heat exchanger;

the cooling loop pump means being electrically attached to and activated by the user adjustable electronic controller when the temperature sensor communicates to the user adjustable electronic controller that the temperature of the vest is higher than the user selected temperature;

the cooling loop liquid heat exchanger having a cooling front side and a cooling back side either or both of which are formed by the electrically reversible hot side of the reversible thermoelectric cooler module, the electrically reversible cold side of which is used to form either or both of the front side or the back side of the vest loop liquid heat exchanger, such that the cooling liquid makes direct contact with the electrically reversible hot side of the reversible thermoelectric cooler module when pumped through the cooling loop liquid heat exchanger when the temperature sensor communicates to the user adjustable electronic controller that the temperature of the vest is higher than the user selected temperature;

the air heat exchanger fan being electrically attached to and activated by the user adjustable electronic controller when the temperature sensor communicates to the user adjustable electronic controller that the temperature of the vest is higher than the user selected temperature by electrically activating the air heat exchanger fan which blows ambient air through the air channel of the air heat exchanger that has been heated by the circulating of the cooling liquid therein and then discharging the now heated blown ambient air into the surrounding ambient air; and

the heating means being comprised of at least one electric heating strip attached to the electrically reversible cold side of the reversible thermoelectric cooler module which is the electrically reversible cold side when the temperature sensor communicates to the user adjustable electronic controller that the temperature of the vest is lower than the user selected temperature.

2. (original): The personal cooling and heating system of CLAIM 1 wherein the temperature transfer medium is water.

3. (original): The personal cooling and heating system of CLAIM 1 wherein the vest is further comprised of a flexible channel means capable of circulating therein the temperature transfer medium.

4. (currently canceled): ~~The personal cooling and heating system of CLAIM 1 wherein the cooling means is comprised of:~~

~~at least one reversible thermoelectric cooler module electrically attached to and activated by a reversible direct current of electricity that is pulsed from the user adjustable electronic controller in one direction when the temperature sensor communicates to the user adjustable electronic controller that the temperature of the vest is higher than the user selected temperature and in the event that the temperature sensor communicates to the user adjustable electronic controller that the temperature of the vest is lower than the user selected temperature the user adjustable electronic controller automatically reverses the direction of the reversible direct current of electricity that is pulsed from the user adjustable electronic controller;~~

~~the reversible thermoelectric cooler module having an electrically reversible hot side and an electrically reversible cold side which is reversed by the user adjustable electronic controller reversing the direction of the pulsed reversible direct current such that the electrically reversible hot side becomes the electrically reversible cold side and the electrically reversible cold side becomes the electrically reversible hot side;~~

~~at least one vest loop liquid heat exchanger attached to the temperature transfer medium transport means wherein when the temperature transfer medium transport means is activated the temperature transfer medium is pumped from the vest through the vest loop liquid heat exchanger and back to the vest;~~

~~the vest loop liquid heat exchanger having a front side and a back side either or both of which is formed by the electrically reversible cold side of the reversible thermoelectric cooler module such that the temperature transfer medium makes direct contact with the electrically reversible cold side of the reversible thermoelectric cooler module when pumped through the vest loop liquid heat exchanger when the temperature sensor communicates to the user adjustable electronic controller that the temperature of the vest is higher than the user selected temperature and in the event that the temperature sensor communicates to the user adjustable electronic controller that the temperature of the vest is lower than the user selected temperature the user adjustable electronic controller automatically reverses the direction of the reversible direct current of electricity that is pulsed from the user adjustable electronic controller such that the electrically reversible cold side of the reversible thermoelectric cooler module becomes the electrically reversible hot side of the reversible thermoelectric cooler module which remains in direct contact with the temperature transfer medium;~~

~~at least one air heat exchanger;~~

~~the air heat exchanger having at least one cooling liquid channel therein;~~

~~a cooling liquid contained in the air heat exchanger cooling liquid channel;~~

~~the air heat exchanger having at least one air channel there through;~~

~~at least one air heat exchanger fan attached to the air heat exchanger;~~

~~at least one cooling loop liquid heat exchanger;~~

~~at least one cooling loop pump means capable of pumping the cooling liquid from the cooling loop liquid heat exchanger to and through the air heat exchanger cooling liquid channel and then back to the cooling loop liquid heat exchanger;~~

~~the cooling loop pump means being electrically attached to and activated by the user adjustable electronic controller when the temperature sensor communicates to the user adjustable electronic controller that the temperature of the vest is higher than the user selected temperature~~

~~the cooling-loop liquid heat exchanger having a cooling front side and a cooling back side either or both of which are formed by the electrically reversible hot side of the reversible thermoelectric cooler module; the electrically reversible cold side of which is used to form either or both of the front side or the back side of the vest loop liquid heat exchanger, such that the cooling liquid makes direct contact with the electrically reversible hot side of the reversible thermoelectric cooler module when pumped through the cooling loop liquid heat exchanger when the temperature sensor communicates to the user adjustable electronic controller that the temperature of the vest is higher than the user selected temperature; and~~

~~the air heat exchanger fan being electrically attached to and activated by the user adjustable electronic controller when the temperature sensor communicates to the user adjustable electronic controller that the temperature of the vest is higher than the user selected temperature by electrically activating the air heat exchanger fan which blows ambient air through the air channel of the air heat exchanger that has been heated by the circulating of the cooling liquid therein and then discharging the now heated blown ambient air into the surrounding ambient air.~~

5. (currently canceled): ~~The personal cooling and heating system of CLAIM 4 wherein the heating means is comprised of:~~

~~at least one electric heating strip attached to the electrically reversible cold side of the reversible thermoelectric cooler module which is the electrically reversible cold side when the temperature sensor communicates to the user adjustable electronic controller that the temperature of the vest is lower than the user selected temperature.~~

6. (formerly withdrawn)

7. (formerly withdrawn)

8. (formerly withdrawn)

9. (currently amended): The personal cooling and heating system of **CLAIM 4 1** wherein the reversible thermoelectric cooler module is at least one Pelitier device.

10. (currently amended): The personal cooling and heating system of **CLAIM 4 1** wherein the reversible thermoelectric cooler module is comprised of at least one Bismuth Telluride cube sandwiched between two ceramic plates.

11. (original): The personal cooling and heating system of **CLAIM 1** wherein the cooling unit, the cooling means, the heating unit, the heating means, the temperature transfer medium

transport means and the power supply are attached to a carrier capable of being worn by a user thereby making the personal cooling and heating system portable.

12. (original): The personal cooling and heating system of **CLAIM 1** wherein the temperature transfer medium transport means is functionally connected to the vest with a self sealing quick disconnect coupling.

13. (original): The personal cooling and heating system of **CLAIM 1** wherein the cooling unit, the cooling means, the heating unit, the heating means, the temperature transfer medium transport means, the power supply and the temperature sensor are all controlled by and in communication with the user adjustable electronic controller by wireless means.

14. (formerly withdrawn)

15. (formerly withdrawn)

16. (formerly withdrawn)

17. (formerly withdrawn)

18. (formerly withdrawn)

19. (formerly withdrawn)

20. (currently amended): A personal cooling and heating system according to **CLAIMS 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, or 13, 14, 15, 16, 17, 18 or 19** in which the cooling unit, the cooling means, the heating unit, the heating means, the temperature transfer medium transport means and the power supply are attached to a carrier capable of being worn by a user thereby making the personal cooling and heating system portable.

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ BLACK BORDERS
- ☐ IMAGE CUT OFF AT TOP, BOTTOM OR SIDES
- ☐ FADED TEXT OR DRAWING
- ☐ BLURRED OR ILLEGIBLE TEXT OR DRAWING
- ☐ SKEWED/SLANTED IMAGES
- ☐ COLOR OR BLACK AND WHITE PHOTOGRAPHS
- ☐ GRAY SCALE DOCUMENTS
- ☒ LINES OR MARKS ON ORIGINAL DOCUMENT
- ☐ REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY
- ☐ OTHER: _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.